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# Introduction

In accordance with the City Auditor's 2005-06 Workplan, we have audited the Environmental Services Department's (ESD) Laboratory. This report is the third audit of programs in the ESD's Watershed Protection Division. We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Scope and Methodology section of this report.

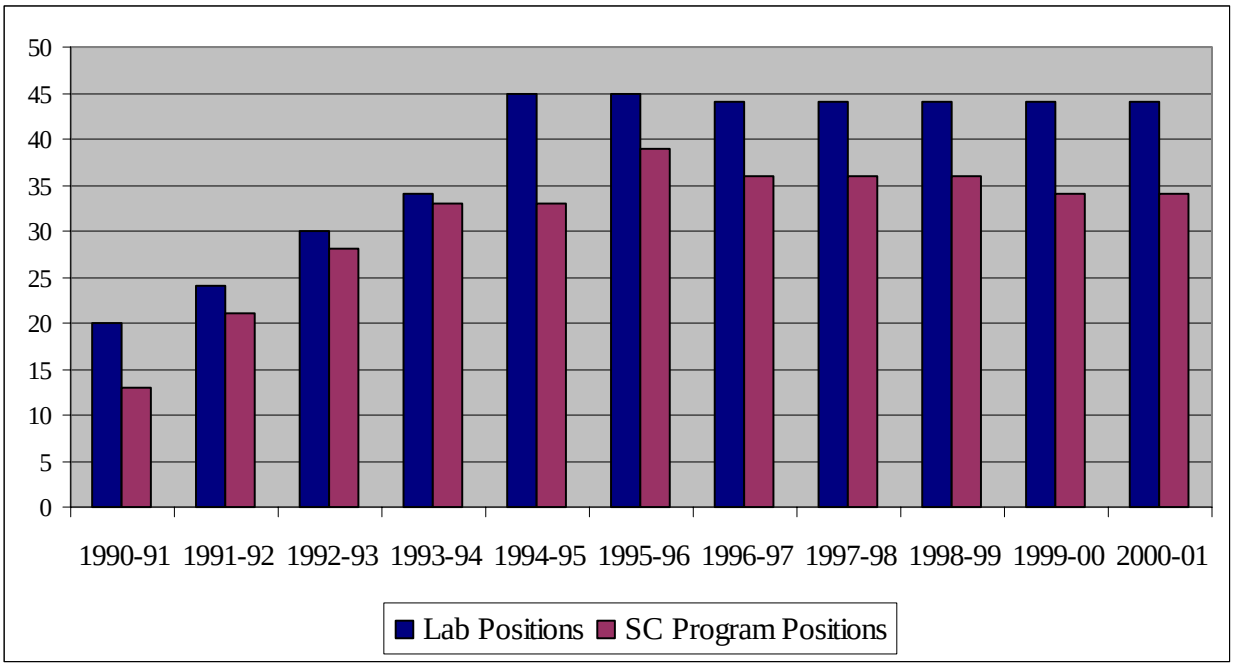
The City Auditor's Office thanks the Laboratory and ESD staff for giving their time, information, insight, and cooperation during the audit process.

## Background

The Environmental Services Department's (ESD) Laboratory (Lab) provides field sampling services and analytical support for the San Jose/Santa Clara Water Pollution Control Plant (WPCP). The Lab analyzes samples to ensure the WPCP is in compliance with federal, state, and regional regulatory requirements as specified in the National Pollutant Discharge Elimination System (NPDES) permits. The Lab also analyzes samples collected through other NPDES permit programs such as the Pretreatment Source Control Program, and special requests from other City departments. Altogether, in 2004-05 the Lab estimates that it processed over 35,000 samples and performed over 50,000 tests on these samples. The Lab is also involved in special studies for projects associated with the City's NPDES Permit requirements and projects that it anticipates may become associated with future regulatory requirements.

In May 2001, the City Auditor issued "An Audit of the Pretreatment Source Control Program." In the audit report, the City Auditor found that ESD's Pretreatment Source Control Program (SC Program) was overstaffed, over-inspected industrial user facilities, and collected an excessive number of samples. As shown in the following chart, the number of Lab positions and the number of SC Program positions had experienced similar patterns during the previous years.

**Exhibit 1 Number Of Lab Positions And Source Control Program Positions Prior To The 2001 Audit Of The Pretreatment Source Control Program**




The excessive sampling we found in the SC Program impacted the Lab's workload. Accordingly, the City Auditor recommended that the ESD, "Make appropriate changes in SC Program services, such as Laboratory services, to reflect the SC Program's revised workload." This audit report is a follow-up to the ESD's implementation of the recommendation.

To implement the audit recommendation, ESD hired a consultant to study the Lab's workload and staffing levels. At the time of the consultant report in November 2001, the Lab had 38 positions with a $3,542,402 personal services budget. The consultant concluded that, "It would be more cost effective to close the laboratory and subcontract the analytical workload to private sector laboratories, but other governing considerations favor currently maintaining laboratory operations and implementing changes to bring its productivity and cost effectiveness into line with commercial laboratory practices." The consultant's final recommendation was to restructure the Lab and eliminate 15 positions, reducing the staffing level from 38 to 23 positions.

In response to the consultant report, the ESD formed an internal review team to develop a Laboratory Evaluation and Management Plan (LEMP) that recommended the reduction of 6 positions, reducing the staffing level from 38 to 32 positions, or 9 fewer position eliminations than the consultant's recommended reduction of 15 positions. ESD management reviewed both the consultant and the LEMP recommendations and prepared a $901,378 budget reduction proposal. Ultimately, the City's 2002-03 Adopted Operating Budget included a $933,000 reduction. The ESD accomplished this reduction by transferring 5 positions to other ESD programs, and eliminating 6 Lab positions, and reducing 2 positions to part-time. Of the 38 2001-02 Lab positions, 26 positions were still in the Lab and 5 positions were reassigned to other ESD programs.

The Lab primarily reduced positions that supported the SC Program (Trace Analytical Support section) and moved positions associated with special projects to other places within the Watershed Protection Division of ESD. The Lab did not reduce any positions in the Wastewater Support Section that processes Plant samples. In April 2005, the ESD deleted another lab position.

**Budget**

The following chart shows the Lab's budget over the past five years. The decreases in non-personnel costs from 2001-02 to 2002-03 are primarily due to decreases in professional and consultant services. The decrease in personnel costs from 2001-02 to 2002-03 are due primarily to the restructuring and budget reductions mentioned earlier.

**Exhibit 2 ESD Lab Budget**

| | 2004-05 Adopted Budget | 2003-04 Adopted Budget | 2002-03 Adopted Budget | 2001-02 Adopted Budget | 2000-01 Adopted Budget |
|---|---|---|---|---|---|
| Personal Costs | $2,544,865 | $2,515,510 | $2,385,418 | $3,542,402 | $3,453,186 |
| Non-Personal Costs | $919,819 | $937,254 | $977,409 | $1,086,959 | $1,768,156 |
| **Total** | **$3,464,684** | **$3,452,764** | **$3,362,827** | **$4,629,361** | **$5,221,342** |

**Background On Lab Requirements**

In 2003, the California Regional Water Quality Control Board adopted the current NPDES Permit for the WPCP's waste discharge. The NPDES Permit is in effect through 2008 and it outlines the Lab's requirements for sample scheduling, testing,

and quality assurance. The NPDES Permit does not require that the WPCP have an on-site laboratory, however, the laboratory performing the analyses must use the methods listed in the NPDES Permit or approved alternate test procedures that are in accordance with the Code of Federal Regulations 40 CFR 136.4 and 136.5. The State has certified the Lab to perform certain tests. The Lab also contracts with other private laboratories to perform additional testing.

Prior to the Lab's reorganization, a section of the Lab worked on special studies that were either required in the NPDES Permit, or were anticipated for future regulation. The NPDES Permit specifies some required studies such as a mercury special study and an avian botulism control program.

**Audit Scope, Objectives, And Methodology**

The objective of our audit was to identify the operational threats facing the ESD Laboratory and the controls that the ESD has in place to prevent, eliminate, or minimize these threats.

Our audit scope focused on Lab data from 2000-01 to 2004-05. We reviewed the program's electronic tracking systems, Consultant report, Laboratory Evaluation and Management Plan (LEMP), interviewed Lab and ESD staff, and reviewed regulatory requirements.

In June 2004, ESD entered into contract to obtain a new Laboratory Information Management System. According to ESD, the new system has been installed and is currently in a beta testing phase. The new system is expected to be fully operational by December 2005.

# Finding I

# The ESD Laboratory Needs To Improve Controls To Accurately Identify Its Workload And Costs

The Environmental Services Department's (ESD) Laboratory (Lab) provides field sampling services and analytical support to ensure that the San Jose/Santa Clara Water Pollution Control Plant (WPCP) is in compliance with the water quality monitoring requirements from federal, state, and regional regulatory agencies. In 2004-05, the Lab processed an estimated 35,000 samples and performed over 50,000 tests on these samples.

During the course of our audit we identified 29 threats or exposures associated with the Lab's workload, data tracking and reporting, and resource allocation. Of these 29 threats or exposures we found the Lab had weak or no controls in place for 19 threats (66 percent). Based on our Risk and Vulnerability Assessment, we found that the Lab had significant gaps in its data collection, tracking, and processes that prevented management from being able to accurately identify the Lab's workload and cost.

In our opinion, the ESD needs to 1) identify the Lab's complete workload including samples, analyses, staff time, and projects; 2) develop reliable, complete, and appropriate management reports to ensure the Lab's workload, staffing levels, and costs are appropriate; and 3) revisit its workload analysis and resource allocation after the new LIMS is fully operational.

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**The Lab Lacks Adequate And Documented Controls To Mitigate 19 Of The 29 Threats We Identified During Our Risk Assessment**

We identified the Lab's lack of adequate internal controls through our Risk Assessment process. The complete Risk Assessment can be found in Appendix B. The rationale for conducting a Risk Assessment is that auditors can limit testing and focus on those areas most vulnerable to noncompliance and abuse. We assigned an "A" to those controls that we perceived to be actual and existing. We assigned a "P" to those controls that we perceived to be either not formalized, or potential controls.

In addition to the Risk Assessment, we also conducted a Vulnerability Assessment (Appendix C). As the Vulnerability Assessment illustrates, we found that the Lab had only weak controls in place for 19 of the 29 threats (66 percent). In our

opinion, these controls were weak because they were inadequate, incomplete, and/or undocumented. Furthermore, we assessed the Lab's vulnerability rating as "high" for 14 (48 percent) of the threats we identified. Based upon our Risk and Vulnerability Assessments, the Lab has agreed to develop formal procedures and management reports to improve its internal controls.

**Based Upon The City Auditor's Risk And Vulnerability Assessments, The Lab Agreed To Develop Formal Procedures And Processes To Improve Its Internal Controls In the Areas We Identified**

The purpose of the City Auditor's Risk Assessment process is to identify the threats facing the program or operation under audit and to identify the controls or procedures the City has in place to prevent, eliminate, or minimize the associated threats related to 1) compliance with laws, rules, regulations, procedures, and policy; 2) economy; 3) efficiency; and 4) effectiveness. Our Risk Assessment of the Lab revealed that it had inadequate systems, processes, and procedures in the areas we identified. Specifically, the City Auditor's Office advised the Lab to address the following threats:

- The ESD estimates that it spent nearly $800,000 from 1994 to 2001 to install a Laboratory Information Management System (LIMS), however, this system has not been fully operational and the Lab has relied on additional makeshift systems to track its workload and results;
- Lab staff spent excessive time manually tracking samples and analyses;
- The Lab could not accurately identify its workload, corresponding staffing levels, and resource allocation needed to efficiently satisfy its workload requirements;
- The Lab did not have adequate, reliable, and complete management information to assess its economy, efficiency, and effectiveness;
- The ESD lacked procedures to authorize, budget, outline the scope of work, and identify the benefit of special projects;
- The Lab's charges for services to other City departments may not accurately reflect the Lab's cost; and
- The ESD commissioned a $50,000 consultant study to assess the most appropriate staffing levels and equipment for the Lab to perform the required functions under the regulatory requirements. However, ESD

conducted its own internal study called the Laboratory Evaluation and Management Plan (LEMP) and did not implement the consultant's recommendations.

We shared this information and the results of our Risk Assessment with ESD and Lab management. ESD management acknowledged the problems with its database tracking. During the time of our review, the City Council approved the ESD entering into a contract with PerkinElmer LAS, Inc, to purchase and implement a new LIMS. The new system is expected to be fully operational in December 2005.

The ESD is also in the process of developing procedures to address the threats we identified in the Risk Assessment. Specifically, the ESD:

- Developed a matrix to identify the regulatory requirements for sampling;
- Developed a list of Lab equipment and documented criteria to determine the need for replacement equipment;
- Is developing a procedure to improve controls over special projects;
- Agreed to review its procedure to improve its methodology for charging City departments for Lab tests, after the new LIMS system is fully operational.

In our opinion, the implementation of these steps and the new LIMS should improve ESD management's ability to assess the Lab's efficiency and effectiveness, and provide added assurance that the City is in compliance with regulatory requirements for workload and reporting to its regulatory agencies. While these steps will help address many of the weaknesses the City Auditor identified during its Risk and Vulnerability Assessment processes, the ESD needs to continue to develop and update controls and procedures for additional operational threats as they arise. Furthermore, because the implementation of the new LIMS is anticipated to address many of the threats we identified, we recommend that the Lab revisit its workload analysis and resource allocation after the new system is implemented.

We recommend that the ESD Laboratory:

**Recommendation #1**

- **Continue to develop the procedures and controls to mitigate the threats we identified.**
- **Revisit its workload analysis and resource allocation after the new LIMS is fully operational. (Priority 2)**

**CONCLUSION**

During the course of our audit we found that the Lab did not have adequate processes, procedures or controls in place to ensure its efficiency, economy, and effectiveness. We identified the lack of adequate and documented internal controls through our Risk Assessment and Vulnerability Assessment process. The Laboratory agreed to develop formal procedures and improve its internal controls in the areas we identified. In our opinion, the ESD Laboratory should 1) continue to develop the procedures and controls to mitigate the threats we identified and 2) revisit its workload analysis and resource allocation after the new LIMS is fully operational.

**RECOMMENDATION**

We recommend that the ESD Laboratory:

**Recommendation #1**

- **Continue to develop the procedures and controls to mitigate the threats we identified.**
- **Revisit its workload analysis and resource allocation after the new LIMS is fully operational. (Priority 2)**

**Click On The Appropriate Box To View Item**

Administrator's Response

Appendix A | Appendix B | Appendix C